

New taxa and combinations of *Ageratina* from Ecuador, Colombia, and Venezuela (Eupatorieae: Oxylobinae)

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Abstract.—Thirteen new species, one new combination, and one new forma of *Ageratina* are validated, mostly from Ecuador, some from Colombia and Venezuela. The new taxa in subg. *Ageratina* are *Ageratina adenophoroides*, *A. campii*, *A. cumbensis*, *A. cumbensis* f. *glandulifera*, *A. ewanii*, *A. parviceps*, *A. pseudogracilis*, *A. rosei*, *A. serrulata*, *A. villonacoensis*, and *A. websteri*, with a new combination for *A. rhodopappa* f. *glandularis*. New species in subg. *Andinia* are *A. harlingii*, *A. maranonii*, and *A. regalis*.

Efforts to complete the tribe Eupatorieae for the Flora of Ecuador have necessitated a review of species of *Ageratina* in and near Ecuador. The result has been the recognition of 26 species in Ecuador, including 17 of subg. *Ageratina* and 9 of subg. *Andinia*. Ecuadorian species include the common *A. pichinchensis* (H.B.K.) R.M.King & H.Rob., *A. sodiroi* (Hieron.) R.M.King & H.Rob., some primarily more northern species, such as *A. glyptophlebia* (B.L.Rob.) R.M.King & H.Rob. and *A. tinifolia* (H.B.K.) R.M.King & H.Rob. and a specimen of the primarily more southern species, *A. glechonophylla* (Less.) R.M.King & H.Rob. One name that has been used in previous studies now falls into synonymy, *A. exerto-venosa* (Klatt) R.M.King & H.Rob. proves to be the same as *A. fastigiata* (H.B.K.) R.M.King & H.Rob.

For useful references on *Ageratina* see King and Robinson (1970, 1990) and Turner (1997).

Ten of the new species are known from Ecuador, *Ageratina pseudogracilis* only from Venezuela and two species, *A. ewanii* and *A. serrulata* only from Colombia. The latter three species all have similar small shrubby habits and glabrous to nearly glabrous achenes. The differences are discussed most completely under *Ageratina serrulata*.

Measurements of heights of heads in the following descriptions include involucre, corollas, and pappus, but exclude emergent styles.

Ageratina (*Ageratina*) *adenophoroides*

H.Rob., sp. nov.

Fig. 1

Type: Ecuador. Bolivar: Carretera Chilan—Tiquibuso, en restos de vegetación y sembríos en vegetación de borde de carterero, en el sector de San José de Guayabal, 01°55'S, 79°05'W, 2100 m, 3 Sep 1987, Zak & Jaramillo 2701 (holotype US, isotype MO).

Ad *A. adenophora* in glandulis stipitatis numerosis similis sed in laminis foliorum apice acuminatis et in floribus e bracteis involucri vix excedentibus differt.

Subshrub to 6 dm high, vegetative branches not seen; stems brownish, terete, densely covered with minute stipitate glandular hairs; internodes 7–10 cm long. Leaves opposite, petioles 1.0–2.5 cm long, slightly broadened distally; blades membranaceous, broadly ovate, 5–8 cm long, 3–5 cm wide, base broadly obtuse to subtruncate, acuminate at petiole, margins serrate with 15–20 short teeth, apex abruptly acuminate, surfaces concolorous, dark dull green, adaxial surface evenly pilosulous,



Fig. 1. *Ageratina adenophoroides* H. Rob., holotype, Zak & Jaramillo 2701 (US).

densely puberulous on main veins, abaxial surface pilosulous on larger veins, puberulous on veinlets; (3–)5–plinervate from 1–2 mm above base, with main secondary veins spreading at ca. a 30° angle. Inflorescences terminal and from distal axils, branches spreading at an angle of 40–45°, covered with minute stipitate glands, ending in rather dense broadly corymbiform clusters of heads; peduncles 4–8 mm long. Heads 5–6 mm high, involucre bracts ca. 15, mostly subequal, elliptical-lanceolate, 4.5–5.5 mm long, ca. 1 mm wide, with immediate tips thinly membranaceous and somewhat acute, mostly yellowish-green, puberulous and narrowly bicostate outside. Florets ca. 25–30 in a head; corollas whitish, ca. 3.3 mm long, basal tube slender, ca. 1.5 mm long, distal part of throat and lobes pilosulous, throat narrowly campanulate, ca. 1.5 mm long, lobes narrowly triangular, ca. 0.4 mm long; anther thecae ca. 0.8 mm long, white. Achenes 1.8–2.2 mm long, fusiform, with short setulae along ribs, many short setulae clustered at carpodium; carpodium annuliform; pappus whitish, of ca. 20 capillary bristles ca. 3.5 mm long, slightly but distinctly broadened distally.

Ageratina adenophoroides is known only from the type collection from 2100 m elevation in south-central Ecuador. The numerous stipitate glands and the long petioles broadened toward the blade are somewhat reminiscent of *A. adenophora* (Spreng.) R.M.King & H.Rob. of Mexico and Central America, which has become weedy in Hawaii and Australia. The Ecuadorian species is easily distinguished by the abruptly acuminate leaf tips and the florets of the heads scarcely exceeding the involucre bracts. The carpodium is unusually short for a member of subg. *Ageratina*.

Ageratina (Ageratina) campii H.Rob.,

sp. nov.

Fig. 2

Type: Ecuador. Cañar: North rim of valley of Río de Cañar, between Suscal and

Chontamarca, 25 Apr 1945, *Camp (Gilar) E-2869* (holotype US, isotype NY).

In foliis primariis valde cordatis late divaricate triplinervatis et in inflorescentiis cymiformibus et in floribus in capitulo 50 vel ultra distincta.

Perennial herbs, woody at base, to 5 dm high, with 1 or 2 pairs of ascending branches; stems brownish to reddish, terete, puberulous with reddish hairs; internodes mostly 2–8 cm long, in some parts fistulose. Leaves opposite, petioles 0.5–2.0 cm long; blades broadly ovate, thinly papery, bright green with purplish tinge, 2.5–6.0 cm long, 2–5 cm wide, base cordate, with deep narrow sinus on larger leaves, margins with 8–10(–20) blunt teeth, coarse and often double from sinus to near tip in larger leaves, apex short-acute, adaxial surface sparsely pilosulous, abaxial surface somewhat paler, with hairs mostly along veins; triplinerved from sinus at base of blade, secondary veins usually spreading at a 45–50° angle, reaching only midleaf, veins sometimes reddish. Inflorescences terminal on leafy stems, rather laxly cymiform, with 8–15 heads; branches puberulous; peduncles 4–14 mm long. Heads 5–7 mm high; involucre bracts 23–25, oblong-lanceolate, ca. 6 mm long, 1.0–1.2 mm wide, outer bracts green, inner stramineous, apices short-acute, inner membranaceous, fringed with many fine hairs, outside sparsely puberulous. Florets 50–70 in a head; corollas whitish, ca. 4 mm long, pilosulous on lobes, few hairs on throat, basal tube ca. 1.5 mm long, throat ca. 2 mm long, lobes 0.5–0.6 mm long; anther thecae ca. 0.9 mm long, whitish. Achenes ca. 2.3 mm long, fusiform, with many setulae on ribs and sides; pappus whitish to pinkish or reddish, of ca. 22 capillary bristles, to 4 mm long, not broadened distally.

Ageratina campii is known only from the type collection from south-central Ecuador. The species seems most distinct in the deeply cordate leaves of the main stems with a widely spreading triplinerved main veins and the 50–70? florets in the heads.



Fig. 2. *Ageratina campii* H. Rob., holotype, Camp E-2869 (US).

The inflorescence also seems more cymiform than in other species. The collection data mention the purplish tinge of the leaves, and the deep pink to reddish pappus, the reddish condition being correlated with a deeper colored, reddish, stem and leaf veins. However, in the dried material, only the pinkish color of some of the pappus bristles is evident.

Ageratina (Ageratina) cumbensis H.Rob.,
sp. nov.
Fig. 3

Type: Ecuador. Azuay: 30 km S of Cumbe on road to Saraguro, 9800 ft, 26 Jan 1979, *King & Almeda* 7806 (holotype US, isotypes CAS, MO).

In plantis fruticosis in ramis virgatis plerumque 3–4 dm altis et in petiolis brevibus distincta.

Wiry often subscandent shrubs 3–4(–10) dm tall, moderately to rather densely branched; stems brownish, terete, puberulous with mostly reddish hairs; internodes 1–6 cm long. Leaves opposite, petioles 1–3(–6) mm long; blades broadly ovate, mostly 1–2 cm long, 7–18 mm wide, base subcordate, margins serrulate with 4 or 5 small blunt teeth, apex obtuse to broadly acute, adaxial surface dark green, glabrous or sparsely pilosulous, abaxial surface paler green to reddish, pilose mostly on veins; triplinervate from base of blade, secondary veins spreading at a 35–40° angle. Inflorescences terminal on leafy stems, with ascending branches ending in few loosely cymosely disposed heads; peduncles 6–30 mm long, puberulous with reddish hairs, with minute stipitate glands in forma *glandulifera*. Heads 7–8 mm long; involucre bracts ca. 15, eximbricate, narrowly elliptical to lanceolate, 4–6 mm long, 0.8–1.0 mm wide, apices acute, firm, puberulous with sparse reddish hairs externally. Florets 30–40 in a head; corollas whitish, 3.5–4.5 mm long, basal tube slender, ca. 1.5 mm long, throat narrowly campanulate, 1–2 mm long, lobes ca. 0.5 mm long, with few to

many hairs outside; anther thecae ca. 0.9 mm long, whitish. Achenes ca. 1.5 mm long, fusiform, sparsely to rather densely setulose along ribs; carpopodium cylindrical; pappus often rather pink, 3.5–4.5 mm long, fragile at base, not or scarcely broadened distally.

Ageratina cumbensis occurs in southern Ecuador in páramo habitats (mostly above 3000 m). The shrubby habit with slender stems and small, sessile leaves is distinctive. Specimens have been determined in the past as *Ageratina cutervensis* (Hieron.) R.M.King & H.Rob.; that Peruvian species differs by the tendency of dried leaves to blacken and by the coarse yellowish hairs of the stems.

Ageratina cumbensis f. *cumbensis*

Peduncles puberulous with reddish hairs, without glands.

Paratypes: Ecuador. Chimborazo: Road/trail from campsite above Río Algo (85 km from Guardiania Alais by road from Alao), NNE to pass/continental divide (via old route to Huamboya), 3350–3550 m, 20 May 1990, *King & Judziewicz* 10168 (MO, US). Azuay: vicinity of Nabón, 25–26 Sep 1918, *Rose, Pachano & Rose* 23014 (US). “Oriente Border,” Parámo del Castillo and surrounding forested areas, crest of eastern cordillera on trail between Sevilla de Oro and Méndez, 9000–10,000 ft, 18 Aug 1945, *Camp E-4822* (NY, US). Along road to Loja, ca. 13 km generally S of Cumbe, ca. 10,900 ft, 4 Feb 1974, *King* 6713 (MO, US). Along road to Loja, ca. 25 km S of Cumbe, ca. 10,800 ft, 5 Feb 1974, *King* 6728 (MO, US). Muletrack Sevilla de Oro–Méndez, at pass and adjacent slopes, Parámo de Castillo, 02°48'S, 78°36'W, 3250–3500 m, 16 Sep 1976, *Øllgaard & Balslev* 9584 (AAU, US). About 7 km SE of Jima on road towards San Miguel de Cuyes, 3100 m, 27 Apr 1985, *Harling & Andersson* 24688 (GB, US). Loja: Parque Nacional Podocarpus, at pass on road Loja–Zamora, 03°58'S, 79°07'W, 2850–2960 m, 11 June 1984, *Øllgaard & Madsen* 74731



Fig. 3. *Ageratina cumbensis* H. Rob., holotype, King & Almeda 7806 (US).

(AAU, QCA, US). Parque Nacional Podocarpus, pass on road Yangana Valladolid (Nudo de Sabanilla), 04°27'S, 79°08'W, 2750–2900 m, 28 Feb 1985, Øllgaard, Laegaard, Thomsen, Korning & Illum 58392, 58402 (AAU, QCA, US). Nudo de Sabanilla, W slope ca. 10 km above Yangana on road to Valladolid, 2500 m, 3 Apr 1985, Harling & Andersson 23582 (GB, US). In páramo of “el Tiro,” Northern terminus of Podocarpus National Park, 500 m from Loja–Zamora highway, 03°59'S, 79°08'W, 2940–2970 m, 9 June 1993, Keating 141 (US). Páramo above refugio de Cajanuma (Centro de Información), Podocarpus National Park, 04°07'S, 79°30'W, 3250–3404 m, 31 Jul 1993, Keating 402 (US). Cordillera de Las Lagunitas, Amaluza–Jimbura–Zumba, km 41, 04°44'55"S, 79°25'13"W, 3270 m, 22 Nov 1994, Jørgensen, Ulloa, León, Vargas & Lozano 782 (LOJA, MO, QCA, QCNE, US). Páramo above Refugio de Cajanuma (Centro de Información), Podocarpus National Park, 04°07'S, 79°09'30"W, 3200–3400 m, 2 Jul 1996, Keating 511 (US). Morona-Santiago: Trail Alao–Huamboya, E slopes above and around La Magdalena, 01°47'S, 78°24'W, 3550–3700 m, 7 May 1982, Øllgaard, Holm-Nielsen, Andreassen, Larsen, Kvist & Jensen 38310 (AAU, QCA, QNA, US).

Ageratina cumbensis f. *glandulifera*

H. Rob., forma nov.

Type: Ecuador. Azuay: 8–10 km S of Cumbe on road to Loja, 9050–9400 ft, 22 Jan 1979, King & Almeda 7756 (holotype US, isotypes CAS, MO).

A varietatis typicis similis sed in pedunculis stipitate glanduliferis differt.

Peduncles with minute stipitate glands mixed with puberulence.

Paratype: Ecuador. Azuay: Along road to Loja, ca. 6 km generally SE of Cumbe, ca. 9600 ft, 4 Feb 1974, King 6693 (MO, US).

Ageratina (*Ageratina*) *ewanii* H. Rob.,

sp. nov.

Fig. 4

Type: Colombia. Nariño: Cordillera Oriental, W slide of Volcán Doña Juana, 3000

m, rare small herbaceous sp. about 30 cm high, among soil pockets of boulder slide, 16 Dec 1944, Ewan 16618 (holotype US; isotype US).

In habitis ad *A. gracilem* similis sed in foliis pilosis et in acheniis subglabrous et in bracteis involucri exterioribus brevioribus distincta.

Subshrub ca. 30 cm high, to 20 cm wide, densely branched; stems brownish, densely pilose with strongly ascending hairs; internodes 4–13 mm long. Leaves opposite, petioles 2–3 mm long; blades stiffly herbaceous, ovate, mostly 7–15 mm long, 3–9 mm wide, base rounded, margins with 5–7 minute appressed teeth, apex acute, adaxial surface puberulous along insculcate main veins, smaller hairs between veins and near margins, abaxial surface densely puberulous with coarse often pale hairs along exsculcate larger veins; triplinervate near base, secondary veins ascending at ca. a 30° angle. Inflorescences densely corymbiform, branches strongly ascending; peduncles 3–8(–12) mm long, densely puberulous with dark hairs. Heads 5–6 mm high; involucre bracts ca. 15, narrowly oblong, 2–4 mm long, apices broadly to narrowly acute, outer 7 or 8 bracts shorter, thicker, puberulous externally, inner bracts with smooth, glabrous, membranaceous tips exerted. Florets 25–30 in a head; corollas white, 3.0–3.2 mm long, basal tube ca. 1.2 mm long, throat ca. 1.2 mm long, lobes ca. 0.8 mm long, pilosulous outside; anther thecae ca. 0.8 mm long, whitish. Achenes ca. 1.8 mm long, nearly glabrous, sometimes with few minute setulae distally on ribs; carpodium cylindrical; pappus whitish, 2.7–3.0 mm long, of ca. 25 fragile capillary bristles, not or slightly broadened distally.

Ageratina ewanii is known only from the type collection. The specimen was previously identified as *A. gracilis*, a common Colombian species with a similar habit but a more decumbent base and glabrous leaves. The new species is most distinctive in the many outer involucre bracts usually distinctly shorter than the inner bracts.



Fig. 4. *Ageratina ewanii* H. Rob., holotype, Ewan 16618 (US).

Ageratina (Andinia) harlingii H.Rob.,
sp. nov.
Fig. 5

Type: Ecuador. Loja: 15 km S of Loxa, 2450 m, 12 Jul 1959, *Harling 5822* (holotype S).

A speciebus pluribus subgeneribus Andiniis in caulibus glandulis stipitatis dense obtectis distincta.

Subshrubs or shrubs 0.2–0.5 m high, with often dense branching in distal subverticillate clusters; stems dark brown, densely covered with short, stout, yellowish, stipitate glands; internodes mostly 1–3 cm long. Leaves opposite, nearly sessile, petioles 1–2 mm long; blades thinly coriaceous, oblong-ovate, mostly 15–32 mm long, 10–25 mm wide, base rounded, margins serrulate with 6–15 teeth, apex short-obtuse, adaxial surface glabrous, smooth or somewhat glossy, with prominulous veins and veinlets, with few or no glandular dots, abaxial surface with prominent veins and prominulous veinlets, densely gland-dotted; triplinervate from 1–2 mm above base of blade, veins ascending at ca. a 35° angle from midrib, with 1 or 2 pairs of weak widely spreading distal secondary veins. Inflorescences terminal on branches, in corymbiform clusters mostly 4–5 cm wide, sometimes with clusters clustered; branches with stout stipitate glands; foliiform bracts and bracteoles subimbricate, 5–10 mm long, 3–7 mm wide; peduncles 1–2 mm long above uppermost bracteole. Heads ca. 10 mm high, 6 mm wide; involucre bracts 12–14 in ca. 2 series, 5–6 mm long, outer bracts thinly herbaceous, oblong-elliptical, ca. 5 mm long, subacute, with glandular dots outside, small stipitate glands nearer base, inner bracts reddish-tinged distally and marginally, membranaceous, lanceolate, 6.0–6.5 mm long, acute, margins with fringe of fine hairs, with glandular dots outside. Florets 12–15; corollas whitish, 5.5–6.0 mm long, with glandular dots on tube and lobes, basal tube 1.5 mm long, throat campanulate at base, cylindrical distally,

3.0–3.5 mm long, lobes 0.7–0.9 mm long; anther thecae ca. 1.2 mm long, slightly reddish to brownish. Achenes narrowly prismatic, ca. 3.5 mm long, scabrid with short setulae on ribs and upper sides; pappus of 35–45 slender bristles, 4.5–5.0 mm long, reddish at base, not or scarcely broadened near tips.

Loja: 15 km S of Loja, 2600 m, 12 Jul 1959, *Harling 5804* (S); 2400 m, 12 July 1959, *Harling 5816* (S).

Ageratina harlingii can easily be distinguished by the habit, with distal clusters of subverticillate branches and the stems rather densely foliate and densely covered with stout, stipitate glands. Only the three 1959 collections of Gunnar Harling have been seen. Subsequent deterioration of the environment in Loja may mean this the localized species is extinct.

Ageratina (Andinia) maranonii H.Rob.,
sp. nov.
Fig. 6

Type: Peru. Amazonas: Prov. Bongará, Jalca zone 3 km south of Pomacocha, E of Shipasbamba, 2400 m, 20 June 1962, *Wurdack 975* (holotype US, isotypes NY, USM).

Ad *A. macbridei* in foliis papyraceis late lanceolatis et stricte pinnate nervosis similis sed in foliis abaxialiter subglabris et in bracteis involucri apice rotundatis vel obtusis differt.

Shrubs 1.5–3.0 m high, branching at a 30–40° angle; stems slightly hexagonal, becoming terete, viscid, with numerous glandular dots; internodes 2.0–6.5 cm long. Leaves opposite, petioles 1.0–2.3 cm long; blades papyraceous, broadly lanceolate, mostly 10–16 cm long, 2–6 cm wide, base obtuse to broadly acute, margins entire in basal fourth, mostly serrulate to serrate with 20–40 teeth, apex narrowly acute to slightly acuminate, surfaces with prominulous reticulum of veinlets, with glandular dots obscure, appearing glabrous, adaxial surface dark green, with pale veins and veinlets,



Fig. 5. *Ageratina harlingii* H. Rob., holotype, Harling 5822 (S).



Fig. 6. *Ageratina maranonii* H. Rob., holotype, Wurdack 975 (US).

sometimes few hairs on midvein, abaxial surface paler green, with few small sparse hairs on veins; secondary veins pinnate, with 10–12 veins on each side. Inflorescences terminal on leafy stems, broadly fastigiate, shallowly rounded-corymbiform; branches and bracts viscid, puberulous to pilosulous; peduncles 1–5 mm long. Heads 7–9 mm long; involucre with ca. 10 green weakly subimbricate bracts, narrowly oblong, 3–5 mm long, apices rounded to obtuse, thinly scarious, weakly bicostate and viscid outside. Florets 5–8 in a head; corollas white, 4.5–5.0 mm long, basal tube ca. 1 mm long, with glandular dots, limb glabrous, throat ca. 3 mm long, lobes ca. 0.5 mm long; anther thecae ca. 1.2 mm long, reddish. Achenes 2.0–2.5 mm long, ribs not pale, with glandular dots on ribs and distally on sides; pappus white or with pink bases, of 30–35 slender unflattened bristles 3–4 mm long.

Paratype: Ecuador. Loja: Cerro Toledo, road to “La Torre,” ca. 7 km SE Yangana, 2500 m, 7 Apr 1985, *Harling & Andersson* 23819 (GB, US).

Ageratina maranonii occurs in northern Peru near Chachapoyas and from one locality in southern Ecuador. The habit in Ecuador is forest and old clearings. The species is closely related to *A. macbridei* B.L.Rob. of central Peru; specimens have been previously identified as that species. The latter has the same large leaf blades with 20–40 teeth and 10–12 pairs of strictly pinnate secondary veins. However, the latter also has distinctive spider-like clusters of hairs on the abaxial leaf surface beside the midvein, its involucre bracts have acute tips, and its corolla lobes are narrower and ca. 1 mm long.

Ageratina (Ageratina) parviceps H.Rob.,
sp. nov.

Fig. 7

Type: Ecuador. Carchi: 4 km NE of Mira on road toward El Angel, roadside near cornfield, 2500 m, 12 May 1990, *King, Peterson & Judziewicz* 10069 (holotype US, isotype MO).

In habitis herbaceis vel suffruticosis et in laminis foliorum 15–30 mm longis et in captulis aliquantum diminutivis et in pedunculis non glanduliferis et in bracteis involucri 3–4 mm longis distincta.

Herbs or subshrubs 35–90 cm tall, sparsely to densely branched; stems brownish or reddish, puberulous or pilosulous with reddish hairs; internodes 1.5–9.0 cm long. Leaves opposite, petioles 2–8 mm long; blades ovate, mostly 15–30 mm long, 9–22 mm wide, base truncate to broadly obtuse, often with broad acumination at petiole, margins serrate with 5–10 ascending rather blunt teeth on each side, apex short-acute, adaxial surface dark green, drying blackish, sparsely pilosulous, sometimes appearing glabrous, abaxial surface usually paler green, puberulous or pilosulous with pale hairs mostly on veins; triplinervate from base of blade, secondary veins spreading at ca. a 30° angle. Inflorescences terminal on leafy stems, with ascending branches ending in rather flat corymbiform cluster of heads; peduncles 5–18 mm long, puberulous to hirtellous with reddish hairs. Heads 5–6 mm high; involucre bracts ca. 15, in ca. 2 series, greenish or reddish, oblong-elliptical, 3–4 mm long, to 1 mm wide, apices acute, margins ciliate, bicostate and puberulous outside. Florets 30–35; corollas whitish, ca. 3 mm long, basal tube ca. 1.3 mm long, throat 1.3–1.5 mm long, lobes 0.3–0.5 mm long, with few small hairs outside; anther thecae ca. 0.8 mm long, white. Achenes ca. 2 mm long, with short setulae on ribs; pappus whitish, rarely slightly reddish, ca. 3 mm long, of ca. 30 capillary bristles, very fragile at base, scarcely wider distally, often densely scabridulous. $n = 17_{II} 2_I$ or round frag., *K6974* (King et al. 1977, as *A. azangaroensis*).

Paratypes: Ecuador. Carchi: La Rinconada, a ranch between Ibarra and Tulcán, 3000 m, 10–11 Aug 1923, *Hitchcock* 20796 (US). Wooded hills about 5 miles S of Tulcán, 10 Aug 1923, *Hitchcock* 20996 (US).



Fig. 7. *Ageratina parviceps* H. Rob., holotype, King, Peterson & Judziewicz 10069 (US).

Road Tulcán–San Gabriel, km 19, S of Tulcán, 3000–3100 m, 22 Feb 1974, *Harling & Andersson 12055* (GB, US). Scrub at edge of Páramo, 10–11 km NE of El Angel, 00°40'N, 77°53'W, ca. 11,000 ft, 8 Aug 1978, *Webster 23073* (DAV, US). 10 km SW of Tulcán, on road to El Angel, 3140 m, 14 May 1990, *King, Peterson & Judziewicz 10118* (MO, US). Imbabura: Lago Cuicocha, ca. 00°20'N, 78°20'W, 3000 m, 10 Dec 1966, *Sparre 13353* (S). Mojanda, ca. 10 km SSW Otavalo, ca. 00°10'N, 78°18'W, 2900–3150 m, 12 Dec 1966, *Sparre 13501* (S). Laguna Cuicocha, crater lake 30 km W of Ibarra, 00°18'N, 78°22'W, ca. 3100 m, 24 May 1973, *Holm-Nielsen, Jeppesen, Løjtnant & Øllgaard 6300* (AAU, S). Vía Nueva América–Tambo–Palmira–Mariano Acosta, zona húmeda, 10,000–10,400–11,800–10,400 ft, 30 Dec 1979, *Jaramillo, Coello & Sarmiento 1754* (AAU, QCA); Otavalo–Hcda. Perugachi, sitio de colecciones Quichinche–Faldas Nor–Oeste de Penas blancas, frente a fábrica de Cemento Solvalogre, zona húmeda, bosque secundario, 2670–2910 m, 5 Jan 1980, *Jaramillo, Coello & Young 1886* (AAU, QCA). Cotacachi Cantón, Reserva Ecológica Cotacachi–Cayapas, Laguna de Cuicocha, Sendero alrededor de la Laguna, Suelo Volcánico, 00°18'N, 78°22'W, 3100–3300 m, 23 Dec 1991, *Peñafiel, Bersosa, Gaibor & Toasa 664* (MO, QCNE, US); Sendero de la Laguna, entre Cotacachi–Loma y la Quebrada de Chumabí, Suelo Volcánico, 00°18'N, 78°22'W, 3000–3300 m, 28 Dec 1991, *Peñafiel, Tamayo & Toasa 776* (MO, QCNE, US). Pichincha: Prope Quito pass. 15 Mar 1871, *Sodiño 29* (S). Rio Machangara pr. urb. Quito, ad Marg. viae., 16 Apr 1920, *Holmgren 519* (S). Ad declivitates montis Pichincha pr. Quito, 30 Sep 1937, *Sydow 170* (S). Iliniza, Hacienda en Ortuno, 3650 m, 26 Nov 1956, *Weydahl 39* (S); Iliniza, Hacienda en Ortuno, 3590 m, 28 Nov 1956, *Weydahl 88, 119* (S). Quebrada Violetas, ca. 4 km W Aloag–Sto Domingo, 3000 m, 25 Mar 1967, *Sparre 14966* (S). Pululahua Crater about 22 km N

of Quito, 2950 m, 5 Apr 1973, *Humbles 6258* (AAU, US). Hacienda de San Xavier, ca. 3 km SW of Chillogallo, ca. 10,800 ft, 17 Jan 1974, *King 6503* (MO, US). W of Calicalí, W slopes of Cordillera Occidental, km 12 on road from Calicalí, mountain scrub along road, 0°01'N, 78°33'W, ca. 2800 m, 24 May 1979, *Løjtnant & Molau 13619* (AAU). Vía Chillogallo–San Juan, partidero desde la población de San Juan hacia faldas del Atacazo “antenas militares,” colección en border del carretero y pajonal, terreno humífero, zona húmeda, 13 Jul 1980, *Jaramillo & Lascano 3128* (AAU, QCA). Carretera de la Hacienda “Mi Cielo,” faldas NW del Volcán Pichincha, 00°10'S, 78°30'W, 3400–3600 m, 24 Apr 1987, *Zak & Jaramillo 2014* (MO, US). Chimborazo: Along Pan-American Highway (route 1), ca. 6 km generally S of Mocha, ca. 11,200 ft, 24 Jan 1974, *King 6580* in part (MO, US). Along road to Riobamba, ca. 45 km SW of Riobamba, ca. 7900 ft, 31 Jan 1976, *King & Garvey 6974* (MO, US). Sucumbios: 8 km E of Pan American Hwy on road to La Bonita, S at Cocha Seca 1.2 km, 00°38'N, 77°41'W, 3000 m, 1 Mar 1992, *Funk & Gavilanes 11060* (US). Napo: Quijos Cantón, Reserva Ecológica Antisana, carretera Pifo–Papallacta, 3 km W de La Virgen, Laguna Miguacochoa–Río Tumiguina, 00°23'S, 78°09'W, 3420 m, 25 Jul 1998, *Vargas, Narváez et al. 1984* (MO, US). Tena Cantón, Parque Nacional Llanganates, Vía Salcedo–Tena, km 55–60, Río Anatenorio, 00°58'S, 78°15'W, 3015 m, 17 Sep 1998, *Vargas, Narváez & Orellana 2531* (MO).

Colombia: Cundinamarca: Páramo de Palacio, *Cleef & Uribe 6729* (US).

Ageratina parviceps occurs only in northern Ecuador at elevations above 3000 m. A few specimens with the characteristics of the species seem to represent occurrences as far south as Chimborazo. Habitats include roadsides beside cultivated fields, scrub at edge of paramo, shrubby vegetation on old lava flows, and very humid montane forest on metamorphic rock sub-

strate. Specimens have been identified in the past as *A. azangaroensis* (Sch.Bip. ex Wedd.) R.M.King & H.Rob., *A. sodiroi* or cf. *A. gracilis* (H.B.K.) R.M.King & H.Rob. The size is small, most like the Colombian *A. gracilis*, but the latter has essentially sessile, glabrous leaves. The present species differs from both *A. azangaroensis* and *A. sodiroi* by having smaller heads with much shorter involucre bracts.

Ageratina (Ageratina) pseudogracilis

H.Rob., sp. nov.

Fig. 8

Type: Venezuela. Tachira Páramo de El Colorado (continuación de El Zumbador), cumbre del páramo, 3200–3300 m, 20 Jan 1973, Cuatrecasas, Ruiz-Terán & López-Figueras 28381 (holotype US, isotypes US).

In habitis ad *A. gracilem* similis sed in foliis pilosis et in acheniis glabris vel subglabris differt.

Subshrub or shrub 2–3 dm high, to 1.7 dm wide, with many branches; stems brownish, hirsutulous; internodes 1–2 cm long. Leaves opposite, subsessile, petioles 1–2 mm long; blades ovate, membranaceous, mostly 12–18 mm long, 5–12 mm wide, base rounded or obtuse, margins with 4–6 low blunt teeth, apex short-acute, adaxial surface sparsely pilose, abaxial surface pilose on veins; triplinervate from very near base of blade, with slender secondary veins spreading at ca. a 35° angle, reaching near distal third, weaker spreading basal veins close to basal margin. Inflorescences corymbiform, with branches strongly ascending, hirtellous; peduncles 2–7 mm long. Heads 5–6 mm high; involucre bracts ca. 15, mostly ca. 4 mm long, 1.2 mm wide, with margins and tips broadly membranaceous, 2 or 3 outer ca. 3 mm long, ca. 0.7 mm wide, without thin margins, apices shortly acute. Florets 30–35 in a head; corollas white, ca. 3 mm long, basal tube ca. 1.2 mm long, throat ca. 1.7 mm long, lobes ca. 0.5 mm long, densely pilosulous out-

side; anther thecae ca. 0.7 mm long, whitish. Achenes ca. 1.7 mm long, nearly glabrous, with few short setulae on distal ribs; carpodia short-cylindrical; pappus whitish, ca. 3 mm long, of ca. 25 fragile capillary bristles, slightly broadened distally.

Ageratina pseudogracilis is known only from the type collection. It resembles *A. gracilis* (H.B.K.) R.M.King & H.Rob. in habit, with its small size and the small, subsessile leaves. The species is evidently more erect, the stems and leaves are pubescent, and the achenes are glabrous or nearly glabrous.

***Ageratina (Andinia) regalis* H.Rob.,**

sp. nov.

Fig. 9

Type: Ecuador. Azuay: 8–10 km S of Cumbe on road to Loja, 9050–9400 ft, 22 Jan 1979, King & Almeda 7754 (holotype US, isotypes CAS, MO).

Ad *A. pseudochilcam* in laminis foliorum coriaceis et subquinqüenervis similis sed in axillis venosi abaxialibus piliferis distincta.

Shrubs or small trees 1–4 m tall, moderately branched, branches ascending at ca. a 45° angle or less, not or scarcely viscid on stems, leaves and branches of inflorescence, with sparse minute puberulence; stems brownish, terete with slight costae; internodes mostly 1.0–5.5 cm long. Leaves opposite, somewhat persistent along distal branches, petioles 5–15 mm long; blades thinly coriaceous, narrowly ovate to ovate-elliptical, mostly 4.0–6.5 cm long, 1.2–3.0 cm wide, base rounded or obtuse to broadly acute, margins with usually 10–22 teeth distal to the basal fifth, apex obtuse to acute, adaxial surface dark green, nitid, with prominent larger veinlets, slightly insculcate smaller veinlets, glandular dots scattered, abaxial surface subnitid, with close reticulum of prominent veinlets, smaller veinlets usually dark, minute glandular dots scattered, not restricted to veinlets, pilose with pale hairs along sides of



Fig. 8. *Ageratina pseudogracilis* H. Rob., holotype, Cuatrecasas, Ruiz-Terán & López-Figueiras 28381 (US).



Fig. 9. *Ageratina regalis* H. Rob., holotype, King & Almeda 7754 (US).

midvein and on bases of secondary veins, especially obvious in axils of large secondary veins; two pairs of strongly ascending secondary veins near base of blade, pair nearest base weak, near margin, distal pair more ascending, spreading at a 30–40° angle, usually straight or with convex curve from base. Inflorescences terminal on leafy stems, fastigiate with ascending branches, forming rather dense slightly rounded corymbiform clusters of heads; peduncles 0–1 mm long, with heads mostly in sessile subgroups of 2 or 3. Heads 7–8 mm long; involucre bracts weakly subimbricate, with ca. 7 subequal bracts, pale green, oblong to elliptical, mostly ca. 4 mm long, apices subacute, scarious, scarcely bicostate outside at base, with many glandular dots. Florets 5–7; corollas white to pale pink or with pink lines, ca. 5.0 mm long, basal tube 1.5–1.8 mm long, with scattered minute glandular dots, throat ca. 2.5 mm long, glabrous, lobes ca. 0.7 mm long, glabrous; anther thecae 1.2–1.5 mm long, reddish. Achenes ca. 2.5 mm long, with minute setulae or glandular dots along ribs, glands on sides near pappus; pappus rather persistent, whitish or base pale pink, 3–4 mm long, of 30–35 bristles, slightly flattened, not broadened distally. $n = ca. 42$, *K6891* (King et al. 1977, as *A. pseudochilca*).

Paratypes: Ecuador. Cañar: Region of San Marcos, ca. 10 km NE of Azogues, 9500 ft, 25 Sep 1944, *Prieto P-69* (NY, US). El Oro: Cerro de Chilla, 03°30'S, 79°38'W, 3595 m, 3 May 1997, *Vargas & Canaday 1423* (MO, QCNE, US). Chimborazo/Cañar: Western escarpment, near, El Tambo, 10,000–11,500 ft, 6–9 Jul 1945, *Camp E-4099* (NY, S). Cañar: Between Biblián and Cañar, ca. 3200 m, 21 Sep 1955, *Asplund 17683* (S); ca. 2900 m, *Asplund 17710* (S). Páramo between Biblián and Cañar, 3350 m, 5 Aug 1959, *Harling 6285* (S). Partidero El Corte–San Miguel de Porotos–Parcialidad Jatupamba–Cerro La Comuna, zona húmeda, 9400–10,000 ft, 26 May 1979, *Jaramillo 985, 1032* (AAU, QCA). Azuay: Cruz Pamba region above

Baños (ca. 15 km SW of Cuenca), 9000–10,000 ft, 29–30 June 1945, *Camp E-3921* (NY, S, US). Cumbe, 3000 m, 9 May 1947, *Harling 824* (S). 10 km S of Cumbe, 3000 m, 8 Jul 1959, *Harling 5660* (S). Sayausid, ca. 3000 m, 1 Apr 1968, *Harling, Storm & Ström 7930* (GB). Road Cuenca–Girón (ca. 10 km N of Girón), ca. 2700 m, 2 Apr 1968, *Harling, Storm & Ström 7949* (GB, US). Cumbe, S of Cumbe, ca. 2700 m, 22–24 Apr 1968, *Harling, Storm & Ström 8703* (GB, US). Along road to Limón, ca. 17 km E of Gualaceo, ca. 8900 ft, 31 Jan 1974, *King 6631* (MO, US). Along road to Loja, ca. 6 km generally SE of Cumbe, ca. 9600 ft, 4 Feb 1974, *King 6695* (MO, US). Portete del Tarqui, Cuenca–Girón, 2700–2900 m, 5 Apr 1974, *Harling & Andersson 13193* (GB, US). Road Cuenca–Loja, upper northern slopes of Valle del Río León and southern parts of Páramo de Tinajillas, ca. 2800 m, 9 May 1974, *Harling & Andersson 14518* (GB, US). Baños, SW of Cuenca, cultivated ground, ca. 2700 m, 12 May 1974, *Harling & Andersson 14572* (GB). Along road to Loja, ca. 17 km S of Cumbe, ca. 9700 ft, 24 Jan 1976, *King & Garvey 6891* (MO, US). Partidero Llantera–Chiquintad–Saucay–Guandum, zona húmeda, 9200 ft, 27 May 1979, *Jaramillo 1051* (AAU, QCA). Tarqui, near the monument, 2600 m, 5 Feb 1982, *Harling, Bohlin, Lindstrom & Roth 20243* (GB, US). Loja: Jera 10 km NE of Saraguro, 03°24'S, 79°14'W, 2 Mar 1989, *Ellemann 91651* (AAU, QCA, US).

Common name: “urcu chilca” (Quechua). Use: for bath, a decoction of whole plant is used.

Ageratina regalis seems endemic to the area of Azuay and nearby parts of Cañar, El Oro, and Loja. The species occurs in páramo or subpáramo vegetation. Specimens have been consistently identified in the past as the more northern *A. pseudochilca*. The present species is instantly distinguishable by the abaxial leaf hairs along the midvein and bases of the secondary veins, which are particularly evident in the axils of the sec-

ondary veins. The stems are also more terete, the leaf blades generally thinner, and the corollas often pink.

The species is named after the collector of a number of the specimens and specialist in the Eupatorieae, Robert Merrill King.

Ageratina rhodopappa f. *glandularis*

(B.L.Rob.) H.Rob., comb. nov.

Basionym: *Eupatorium pichinchense* f. *glandulare* B.L.Rob., Contrib. Gray Herb., n.s. 61:10. 1920. Type: Ecuador. Chimborazo: vicinity of Huigra, mostly on Hacienda de Licay, Aug 1918, *Rose & Rose* 22210 (holotype GH, isotypes NY, US).

Ageratina (Ageratina) rosei H.Rob.,

sp. nov.

Fig. 10

Type: Ecuador. Chimborazo: Vicinity of Huigra, mostly on Hacienda de Licay, 21 Aug 1918, *Rose & Rose* 24078 (holotype US).

Ad *A. rhodopappam* f. *glandularum* in setis pappi roseis et pedunculis glanduliferis similis sed in laminis foliorum base triplinervatis differt.

Herbs 5–10 dm tall, scarcely to moderately branched, often with many proliferations from axils; stems slender, brownish to purplish, terete, usually puberulous to hirtellous; internodes 1.5–6.5(–14.0) cm long. Leaves opposite, petioles 4–16 mm long; blades thinly papyraceous, ovate, mostly 1.2–5.0 cm long, 0.6–3.0 cm wide, widest near basal 5th, base subtruncate or shallowly cordate to rounded, margins crenate or serrate with 5–12 blunt teeth on each side, apex acute, rarely slightly acuminate; adaxial surface sparsely and evenly pilosulous, abaxial surface slightly paler, pilosulous mostly on veins; triplinervate from base of blade at petiole, rarely just distal to base. Inflorescences terminal on leafy stems, broadly and usually rather flatly corymbiform; branches ascending, usually with many minute stipitate glands; peduncles 5–17 mm long. Heads 6–8 mm high;

involucral bracts ca. 18, greenish or brownish-green with purplish tips, oblong-lanceolate, mostly subequal, 4–6 mm long, 1.0–1.3 mm wide, apices acute, inner bracts with paler membranaceous often erose tips, scarcely ciliate, outside minutely puberulous with usually reddish hairs, narrowly bicostate. Florets ca. 35–45 in a head; corollas whitish, 3.5–4.0 mm long, basal tube slender, 1.0–1.5 mm long, throat 1.5–2.0 mm long, lobes 0.5–0.8 mm long, with few hairs outside; anther thecae 0.6–0.9 mm long, white. Achenes ca. 2 mm long, fusiform, with many short setulae along ribs from carpodium to pappus, very rarely glabrous; carpodium cylindrical; pappus of ca. 20 whitish to mostly reddish bristles, fragile at base, 3.5–4.0 mm long, scarcely to distinctly broadened distally. $n = 17 + 1$, K6532; $n = 17 + 2$ frag., K6587 (King et al. 1977, as *A. azangaroensis*).

Paratypes: Ecuador. Locality uncertain: In locis herbidis subandinis, *Sodi* 549 (US). And. Quitenorum, s.d., *Jameson* s.n. (S). El Oro: Railway station Cotopaxi, 3550 m, 26 May 1939, *Asplund* 6498 (S). Pichincha: Pichincha, a little above Quito, 3200–3500 m, 1952?, *Fagerlind & Wibom* 2035 (S). Antisanilla, 11,500 ft, Oct 1923, *Anthony & Tate* 337 (US). Cerca de la estación de Chiriaco, 2820 m, 2 Apr 1928, *Firmin* 421 (US). Quito, Panecillo, 2900 m, 16 May 1939, *Asplund* 6078 (S). Saloya (W of Quito), 2000 m, 28 June 1939, *Asplund* 7360 (S). Dauli (flag stop) on railroad SE of Corazon Volcano, 00°34'S, 78°36'W, 3300 m, 31 May 1947, *Fosberg* 27638 (US). Cordillera Occidental, los Vertientes de Pichincha, 11 Jul 1959, *Barclay, Juajibioy & Tinajero* 7819 (US). Cordillera Occidental, Páramo de Trujillo, border of Prov. Cotopaxi, between peaks Illiniza to W and Cotopaxi to E, ca. 3450 m, 15 Jul 1959, *Barclay & Juajibioy* 7933 (US). Quebrada Yanahuaico, ca. 3 km W Conocoto, 2700–2800 m, 3 Dec 1966, *Sparre* 13292 (S). Road St Domingo–Quito, Cornejo Astorga (Tandapi), ca. 1600 m, 7–10 May 1968, *Harling, Storm & Ström* 9393 (GB). Cerro



Fig. 10. *Ageratina rosei* H. Rob., holotype, Rose & Rose 24078 (US).

Pichincha, above Quito, 3500–5000 m, 2 Nov 1974, *Gentry 12381* (MO). Along route from Quito to Santo Domingo de los Colorados between San Juan and La Palma via Chiriboga, 15 km NE of Chiriboga, 2480 m, 2 Sep 1976, *Croat 38725* (MO). Along road between Quito and Nanegal, via Cotocollao and Nono, 18–21 km NW of Quito, 3100–3200 m, 4 Sep 1976, *Croat 38802* (MO). Páramo and shrub vegetation on the eastern slopes of Cerro Pichincha, 3600–4000 m, 26 Jan 1977, *Harling, Eliasson & Andersson 14834* (GB). W slopes of Cordillera Occidental, W of Calicalí, 00°01'N, 78°32'W, ca. 2700 m, 25 Mar 1979, *Løjtnant & Molau 11358* (AAU, GB). W of Calicalí, W slopes of Cordillera Occidental, km 12 on road from Calicalí, 00°01'N, 78°33'W, 24 May 1979, *Løjtnant & Molau 13619* (AAU, GB). Quito, Parraoquia El Salvador–Toctiuco–Chorrera–Faldas del Pichincha, zona húmeda, pendiente, 11,000–11,400 ft, 24 Jun 1979, *Jaramillo & Jaramillo 1206* (AAU, QCA); Hcda. Mi Cielo–Faldas del Pichincha, zona húmeda, 11,000 ft, 20 Jul 1979, *Jaramillo 1260* (AAU, QCA); vía Toctiuco–Chorrera–Pirámide (Antena de Televisión) Faldas del Ruccu–Pichincha, zona húmeda, 11,600 ft, 11 Aug 1979, *Jaramillo & Lascano 1328* (AAU, QCA); Pasochoa–Localidad Sur Oriente, colecciones en bosque de Coja Andina y pajonal, zona húmeda, 3500–3650 m, 17 Nov 1979, *Jaramillo, Coello, Narvaes, Elisabeth, Bravo & Rasa 1567* (AAU, QCA). Carretera Chillogallo–San Juan–Chiriboga–Empalme, colecciones en alrededores de San Juan, 00°18'S, 78°39'W, 3100–3260 m, 8 Sep 1985, *Zak & Jaramillo 621* (MO, US). Carretera Quito–San Juan–San José de la Victoria, en la cercanía de San José, 2900–3400 m, 24 Dec 1987, *Zak & Jaramillo 3280* (MO, US). Cotopaxi: Volcán Cotopaxi, above Limpio Pamba, 00°37'S, 78°26'W, 3781 m, 10 Jul 1963, *Ugent & Alborno 5662* (US). Volcán Cotopaxi WNW slopes (NE Ami Grande) 4000 m, 26 Apr 1967, *Sparre 15777* (S). Road Salcedo–Napo, km 21,

3800 m, 5 Sep 1967, *Sparre 18420* (S). Road Quevedo–Latacunga, Zumbagua, W of Zumbagua, ca. 3200 m, 2 May 1968, *Harling, Storm & Ström 8942* (GB, US). Tungurahua: Along road to Baños, ca. 1 km SE of Ambato, ca. 8700 ft, 20 Jan 1974, *King 6532* (MO, US). Mocha, alrededores del Pueblo, 01°27'S, 78°40'W, 2900 m, 30 Sep 1995, *Villacres 257* (F, US). Bolívar: Railway station Cotopaxi, 3550 m, 26 May 1939, *Asplund 6498* (S, US). Along road to Guaranda (route 7), ca. 28 km generally SW of Ambato, ca. 11,000 ft, 25 Jan 1974, *King 6587* (MO, US). Chimborazo: Vicinity of Huigra, mostly on Hacienda de Licay, 28 Aug 1918, *Rose & Rose 24078a* (US); 6 Sep 1918, *Rose & Rose 24078b* (US). Cañon of Río Chanchan near Huigra, 4000–4500 ft, 7–14 May 1945, *Camp E-3148* (NY, S, US). Between San Andrés and Cuatro Esquinas, Oct 1952, *Fagerlind & Wibom 881* (S). El Retén (20 km south of Cebadas, 31 Jan 1968, *Harling, Storm & Ström 6793* (GB). Carretera Riobamba–Licito–Pungalá–Alao–Huamboya, en la quebrada Supaychuan, 01°50'S, 78°30'W, 3570–3620 m, 26 Dec 1987, *Zak & Jaramillo 3304* (MO, US). Cañar: between Biblián and Cañar, edge of thicket, ca. 3200 m, 21 Sep 1955, *Asplund 17682* (S). Azuay: Cerro Soldados (W of Sayausid), below Quinoas, ca. 3400 m, 25 Apr 1968, *Harling, Storm & Ström 8748* (GB). Napo: Alrededores de la Cordillera de Los Llanganati, Chihuilá Sacha o Ainchilibí, 25–29 Aug 1959, *Barclay & Juajibioy 9004* (US). Morona-Santiago: Parque Nacional Sangay, Peace Corps Sangay Mountaineering Expedition, between Plazapamba and Yanayacu, 02°02'S, 78°25'W, 3200–3600 m, 23–31 Dec 1995, *Clark, Harris, Sulser, Teizeira & Baño 1829* (MO, QCNE, US).

Three additional paratypes are triplinervate slightly above base of the blade:

Ecuador: Pichincha: Crescit prope Quito, 1864, *Jameson s.n.* (US). Puingasí (cul.) en um cerco, ca. 3000 m, 18 Apr 1927, *Firmin 46* (US, achenes without setulae). Quito Cantón, carretera Quito–Nono–Tandayapa,

00°01'N, 78°40'W, 1500–1800 m, 5 Sep 1991, *Rubio 2083* (MO, QCNE).

Peru: Dept. Lambayeque: Prov. Ferrenafe: Sinchigual–Laguna Tembladera, Distrito Incahuasi, 3100 m, 13 Sep 1985, *Sagástegui, Skillman, Mostacero & Ramírez 12859* (F, HUT, US).

Ageratina rosei occurs mostly in central Ecuador at middle and higher elevations. Habitats cited include páramo on dry rocks of high cliff above grassy slope, on ridges in montane forest area, bunch-grass association, under shrubs along ditch between cultivated fields, and roadside. The combination of often reddish pappus and glanduliferous inflorescence branches tends to distinguish the species. It is named for the collector of some of the earlier specimens, Joseph Nelson Rose, and its pappus color was also taken into consideration in the choice of the name. Some of the early collections of the species were identified by B. L. Robinson as his *Eupatorium pichinchensis* f. *glandulare*, the type of which has the triplinervation of the leaf far distal to the base of the blade, and it is placed now in *A. rhodopappa*. Both *A. rosei* and *A. rhodopappa* lack the long stem hairs of *A. pichinchensis*, although some specimens of that species have glands on the inflorescence branches and reddish pappus bristles. More recent collections of *A. rosei* have often been determined as *A. azangaroensis* (Sch.Bip. ex Wedd.) R.M.King & H.Rob., an apparent synonym of *A. glechonophylla* (Less.) R.M.King & H.Rob. that has generally larger heads, corolla throats much longer in comparison to their lobes, and achenes with coarser setulae on the ribs and distal lateral surfaces. The Peruvian specimen has generally longer peduncles, 2.5 cm long.

Ageratina (Ageratina) serrulata H.Rob.,
n.sp.

Fig. 11

Type: Colombia. Antioquia: Ituango, camino entre El Retiro y Cerro Paramillo,

3200–3600 m, 25 Feb 1993, *Cuadros 5003* (holotype HUA, isotypes MO, US).

In habitus ad *A. gracilem* similis sed in foliis flaccide pilosis in foliis erecto-patenter multiserrulatis et in acheniis glabris distincta.

Subshrubs 15–20 cm high, sparsely branched below, distal parts densely branched; stems dark brown when dry, densely hirsute with flaccid hairs; internodes mostly 4–8 mm long, to 25 mm long on young shoots. Leaves opposite, petioles 2–4 mm long; blades papyraceous, ovate, 10–22 mm long, 5–12 mm wide, base rounded to broadly obtuse, margins with 5–11 small sharp teeth, apex acute, adaxial surface pilosulous with sparse hairs, abaxial surface with long flaccid hairs spreading from midvein and larger secondary veins, triplinervate at the base of blade, secondary veins spreading at a 30–35° angle. Inflorescences terminal on leafy stems, often overtopped by lateral leafy shoots, branches slender, few, sparsely hirtellous, peduncles 4–17 mm long. Heads ca. 5 mm high; involucre bracts 15–17, lanceolate, subequal, ca. 4.5 mm long, 0.7 mm wide, narrowly acute, glabrous outside, inner bracts thinner, paler, bicostate. Florets ca. 30 in a head; corollas white, ca. 3.5 mm long, basal tube ca. 1.5 mm long, throat ca. 1.3 mm long, lobes ca. 0.6 mm long, with few or no hairs; anther thecae whitish, ca. 0.7 mm long. Achenes ca. 2 mm long, glabrous; carpodium narrowly cylindrical; pappus whitish, ca. 3 mm long, of ca. 20 fragile bristles, scarcely broadened distally.

Ageratina serrulata is known only from the type collection. The species is one of four described in this paper that have at times been identified as *A. gracilis* (H.B.K.) R.M.King & H.Rob. All are from above 3000 m and differ from the Colombian *A. gracilis* by the more erect habits and the pubescence on the leaf blades. The Ecuadorian species, *A. parviceps*, is usually a larger plant with much longer petioles, and it has definitely setuliferous achenes. The western Venezuelan *A. pseudogracilis* and



Fig. 11. *Ageratina serrulata* H. Rob., isotype, Cuadros 5003 (US).

southern Colombian *A. ewanii* differ by the broader more membranaceous tips on the involucre bracts, the very short internodes of the stems, and nearly but usually not completely glabrous achenes. Also, *A. ewanii* has a series of outer involucre bracts usually distinctly shorter than the inner ones. The present *A. serrulata* is most distinct in the many sharper more jutting small teeth of the leaves and by the lanceolate essentially glabrous bracts of the involucre.

Ageratina (Ageratina) villonacoensis

H. Rob., n.sp.

Fig. 12

Type: Ecuador. Loja: Eastern slopes of Cerro Villonaco, grassland or dense shrub vegetation, 2500–2600 m, 12 Apr 1974, Harling & Andersson 13439 (holotype US, isotype GB).

Ad *A. pichinchensem* in caulibus villosis et in inflorescentiis compactis similis sed in laminis foliorum base cordatis margine acute dentatis et apice valde acuminatis et in bracteis involucri longe acuminatis distincta.

Subshrubs to ca. 1 m tall, sparsely branched; stems scrambling, terete, densely villous with often violet septate hairs over 1 mm long; internodes 6–9 cm long. Leaves opposite, petioles 5–18 mm long; blades broadly ovate, 2.5–5.0 cm long, 2–4 cm wide, papyraceous, base rounded to shallowly cordate, margins coarsely serrate, with 7–10 teeth on each side, apex distinctly acuminate, adaxial surface pilose, abaxial surface pilose on veins; triplinervate from base, often from basal acumination, with secondary veins spreading at ca. a 45° angle. Inflorescences terminal on leafy stems, with branches spreading at a 30–45° angle, densely villous; ending in rather dense corymbiform clusters of heads; peduncles 3–6 mm long. Heads 7–8 mm long; involucre bracts 20–22, in ca. 2 series, papyraceous, subequal, lanceolate, 6–7 mm long, 0.8–1.0 mm wide, outer bracts purplish, inner bracts stramineous, tips narrowly acute to long-

acuminate, outside pilose with violet hairs. Florets ca. 30–35 in a head; corollas white, 4.0–4.3 mm long, pilosulous on distal part of throat and on lobes, basal tube slender, ca. 2 mm long, throat ampliate, becoming cylindrical, ca. 1.7 mm long, lobes ca. 0.7 mm long, pilosulous with fine hairs; anther thecae ca. 1 mm long, whitish. Achenes ca. 2 mm long, fusiform, setuliferous on distal part of ribs and on sides near pappus; pappus whitish, of ca. 25 capillary bristles ca. 3.5 mm long, fragile at base, slightly broadened distally.

Paratype: Peru. Cajamarca: Prov. Cajamarca, Cerro Chupacotoy, 2800 m, 2 June 1992, Ochoa & Salas 16139 (US).

Ageratina villonacoensis is known only from the type collection in southern Ecuador and a single similar but smaller-headed and less pubescent specimen from Cajamarca, Peru. It is similar to *A. pichinchensis* and *A. sodiroi*. It has the longer pubescence of the former, without any trace of stipitate glands sometimes found in that species. It has the larger more acute teeth of the leaf margins as in *A. sodiroi*, but the latter has shorter pubescence. The present species differs from both the related species by the more strongly cordate bases of the leaf blades and by the narrow often long-acuminate tips of the involucre bracts.

***Ageratina (Ageratina) websteri* H. Rob.,**

sp. nov.

Fig. 13

Type: Ecuador. Pichincha: Secondary montane rain forest, trail to waterfall, Reserva El Pahuma, weed with white flowers, 00°01'N, 78°38'W, 1920 m, 18 June 1996, Webster 31619 (DAV, US).

In habitis decumbentibus et in caulibus rubri-puberulis et in laminis foliorum 20–32 mm longis et margine argute serratis et in capitulis laxè dispositis et in bracteis involucri e acheniis vix longioribus et in floribus in capitulo 20–25 et in tubis corollarum sparsim minute pilosulis distincta.

Herbs with long decumbent rooting



Fig. 12. *Ageratina villonacoensis* H. Rob., holotype, Harling & Andersson 13439 (US).



Fig. 13. *Ageratina websteri* H. Rob., holotype, Webster & Hierro 31619 (US).

stems and projecting leafy branches 4–5 dm long, branching at ca. a 45° angle; stems brownish to dark reddish, densely puberulous with reddish hairs; internodes mostly 1.5–4.0 cm long. Leaves opposite, petioles 4–7 mm long; blades membranaceous, ovate, 20–32 mm long, 8–14 mm wide, base obtuse, margins serrate with 4–6 sharp teeth, apex acute, adaxial surface dark green, nearly glabrous, with scattered minute hairs, more puberulous on veins near base, abaxial surface slightly paler, with few hairs along veins; triplinervate 1.0–1.5 mm distal to base of blade, secondary veins spreading at ca. a 25–30° angle. Inflorescences terminal on leafy branches, with 1–7 laxly disposed heads; branches puberulous with reddish hairs; peduncles slender, 12–25 mm long. Heads 5–6 mm high; involucre bracts ca. 15, in 1–2 series, membranaceous, few outer bracts darker green, narrowly oblong, subequal, 2.0–2.5 mm long, ca. 0.5 mm wide, apices obtuse, densely ciliate with fine hairs, outside puberulous with sparse minute hairs, costae not obvious. Florets 20–25 in a head; corollas whitish, ca. 2.8 mm long, with fine pale hairs on basal tube, basal part of throat and on lobes, basal tube slender, ca. 1.5 mm long, throat ca. 1 mm long, lobes ca. 0.3 mm long; anther thecae ca. 0.5 mm long, whitish. Achenes ca. 2 mm long, with minute setulae often biseriate along ribs, sparse distally on sides; carpodium cylindrical; pappus ca. 2.8 mm long, whitish or

pinkish, of ca. 25 slender bristles, not or scarcely broadened distally.

Ageratina websteri is known only from the type collection. It was originally determined as possibly *A. psilodorum*, a Colombian species, but it does not have the glabrous stems of that species. Relationship is regarded here as closest to *A. parviceps*, which has a more erect habit with more heads on shorter peduncles, over 30 florets in the heads, corolla tubes and throats without hairs, larger more overlapping involucral bracts distinctly longer than the mature achenes, an almost strictly whitish pappus, and which occurs at elevations usually at least 1000 m higher.

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